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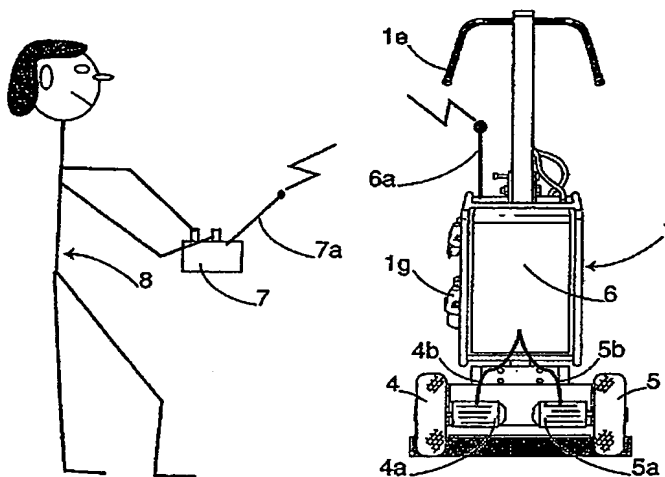
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(54) Title: ARRANGEMENT IN A MOBILE MACHINE FOR GRINDING FLOOR SURFACES



(57) Abstract: The present invention relates to an arrangement in a mobile machine (1) for grinding floor surfaces, comprising a housing (1a), which is supported partly by two wheels (4, 5) and partly by a number of rotatably supported grinding disks (1c1, 1c2, 1c3, 1c4), which are distributed over planet disk (1d) rotatably supported at the bottom of the housing (1a) and are operatively connected to a drive motor (1b), the planet disk (1d) being designed to be driven by the drive motor (1b). The grinding disks are four in number and the arrangement comprises a drive motor (4a, 5a) mechanically connected to each wheel (4, 5) and a control unit (6) influencing the direction of rotation and the rotational speed of the drive motors (4a, 5a), the control unit being operatively connected via a radio communications unit to an operating device (7). The latter is designed for manual actuation by an operator (8) for remote control of the grinding machine (1).

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## ARRANGEMENT IN A MOBILE MACHINE FOR GRINDING FLOOR SURFACES

The present invention relates to an arrangement according to the pre-characterising clause of the patent claim.

US 6238277 B1 discloses a mobile machine of the said type.

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In grinding floor surfaces the rate at which the grinding machine is advanced by an operator is naturally determined by the time it takes to obtain an acceptable grinding result. This rate is normally only a fraction of normal walking pace, something that the person advancing the machine ultimately finds very uncomfortable and tiring. Although  
10 it would be possible to advance the machine at normal walking pace, this would then involve the need for repeated grinding, which may result in a failure to observe any occurrence of sections where the grinding result is unacceptable.

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The object of the present invention is to release the operator of the grinding machine from the actual propulsion of the machine. This is achieved in that the invention has the features specified in the characterising part of the patent claim.

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The subordinate claims indicate alternative operative connections between operating devices and the control unit forming part of the arrangement according to the invention.

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The invention furthermore affords the advantage that a dust/sludge suction unit, which is coupled to the grinding machine via a suction hose, can be located in close proximity to the grinding machine in the space normally occupied by the operator. The suction hose can thereby be made shorter so that the flow losses therein are reduced and the suction  
25 capacity is increased. If this increased suction capacity cannot be utilised in order to improve the result, there is the alternative option of reducing the energy required for the suction, thereby achieving an energy saving.

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The operator is normally not required to continuously steer the machine but can concentrate on monitoring the grinding result and if necessary increasing or reducing the rate of advance, removing any obstacles or even controlling more than one grinding machine.

The invention will be explained in more detail below with reference to figures attached, of which:

- Fig. 1 shows, in schematic form, a perspective front view of a grinding machine according to the invention having a dust suction unit coupled thereto by a short suction hose;
- Fig. 2 shows, by way of example, a plan view of the grinding machine according to Fig. 1 from the rear and how an operator controls the grinding machine remotely;
- Fig. 3 shows grinding disks arranged on a planet disk.

In the drawing 1 generally denotes a mobile machine for grinding floor surfaces according to the present invention. Fig. 1 shows how a dust suction unit 3 is connected to the grinding machine 1 by a very short suction hose 2. As already stated, the short suction hose 2 affords great advantages and is possible due to the fact that the dust suction unit 3 can be located in the space normally occupied by an operator.

The grinding machine comprises a housing 1a with a drive motor 1b arranged thereon and is supported partly by two wheels 4, 5 and partly by grinding disks 1c1, 1c2, 1c3, 1c4 located at the bottom of the housing and rotatably supported on a planet disk 1d. For driving the planet disk 1d and the grinding disks 1c1, 1c2, 1c3, 1c4, these are operatively connected to the motor 1b in a manner not further specified here, since this operative connection is not the subject matter of the present invention.

According to the invention, a drive motor 4a, 5a is mechanically connected to each wheel 4, 5 and is in turn electrically connected by leads 4b, 5b to a control unit 6. The latter comprises means, familiar to the person skilled in the art, for controlling the motors 4a, 4b and hence the direction of rotation and the rotational speed of the wheels 4, 5 as a function of control signals from an operating device 7, which is manually actuated by an operator 8. The control signals are transmitted from the operating device 7 to the control unit 6 via radio communications units in the operating device 7 and the control unit 6, as illustrated by antennae 6a and 7a connected to these respectively.

The arrangement according to the invention allows the operator 8, from a location affording a good, clear view of the floor surface that is to be ground, to carry out this grinding and, if so required, to briefly study the grinding result at close quarters, and if required to control the machine in order to locally repeat the grinding.

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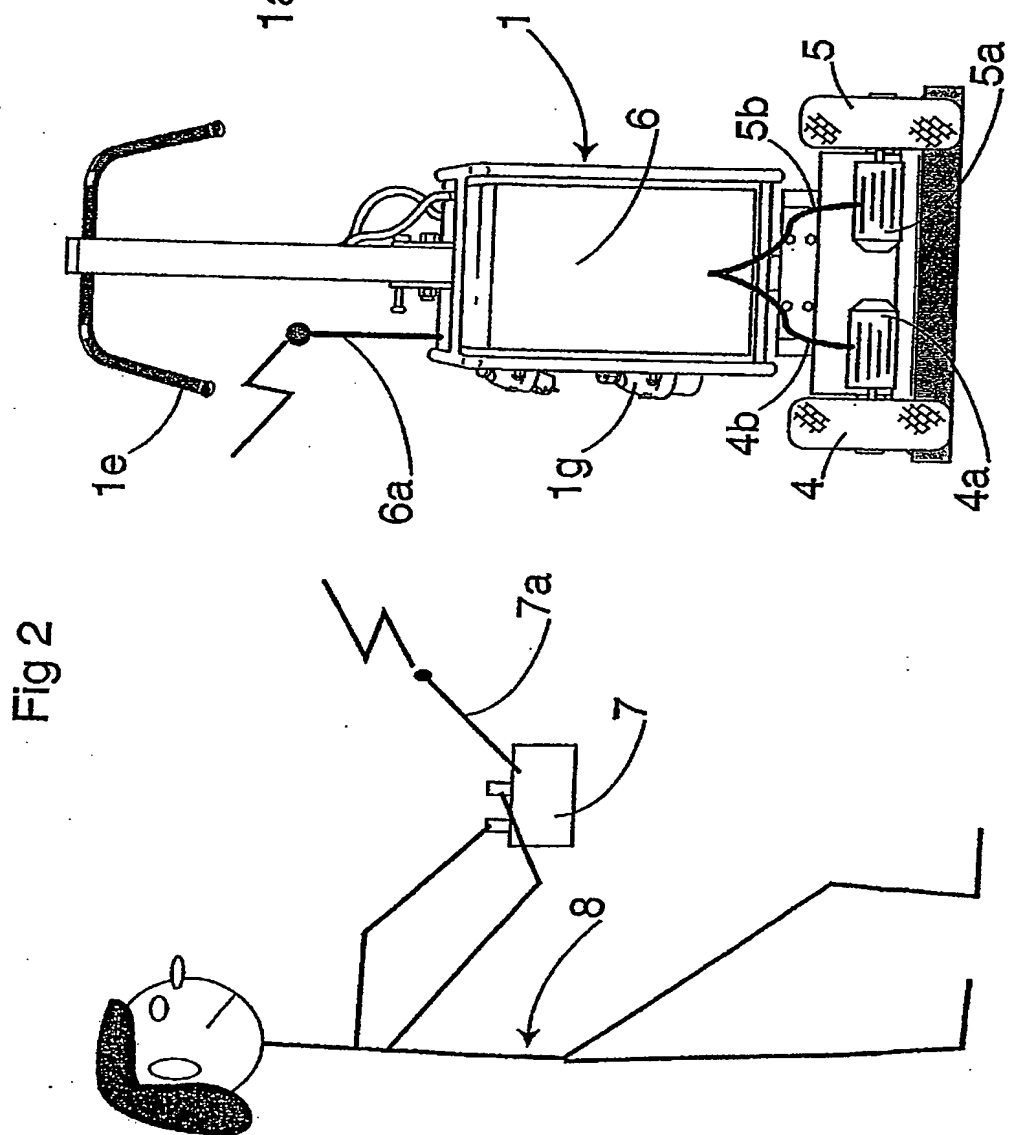
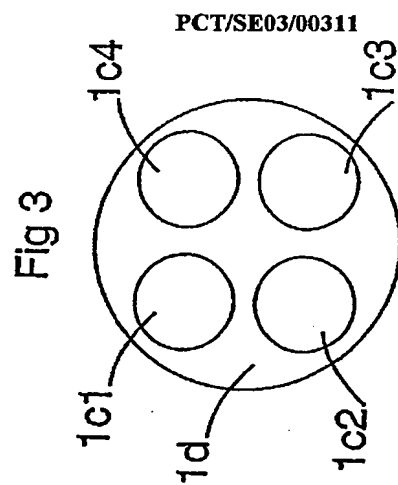
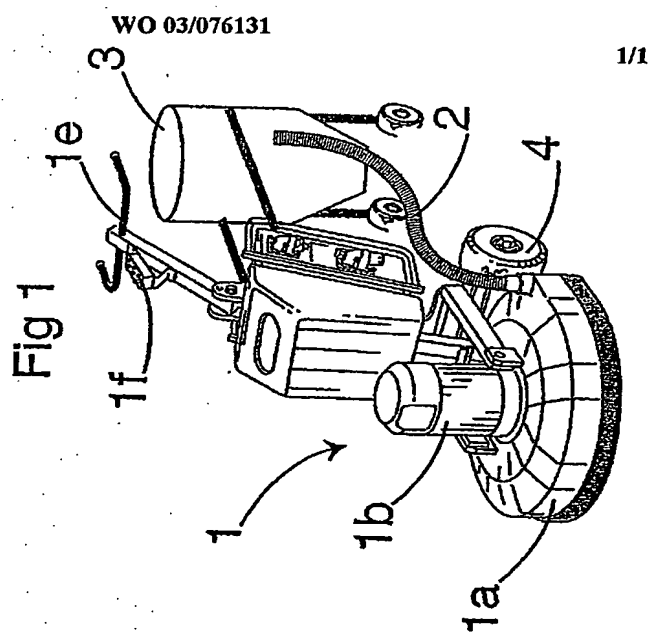
The operator is naturally able, whenever appropriate, to carry out the grinding in the hitherto conventional way, that is to say by manually guiding the machine 1 by means of control handles 1e and controls 1f provided thereon. Also visible on the drawing are connections 1g for electrical cables supplying the motor 1b and the control unit 6. The

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said electrical cables are suitably brought together on a carriage (not shown) or suspended above the floor surface that is to be ground.

Claim

1. Arrangement in a mobile machine (1) for grinding floor surfaces, comprising a housing (1a), which is supported partly by two wheels (4, 5) and partly by a number of rotatably supported grinding disks (1c1, 1c2, 1c3, 1c4), which are distributed over a planet disk (1d) rotatably supported at the bottom of the housing (1a) and are operatively connected to a drive motor (1b), the planet disk (1d) being designed to be driven by the drive motor (1b), characterised in that the grinding disks are four in number, and that the arrangement comprises a drive motor (4a, 5a) mechanically connected to each wheel (4, 5) and a control unit (6) influencing the direction of rotation and the rotational speed of the drive motors (4a, 5a), the control unit being operatively connected via a radio communications unit to an operating device (7), designed for manual actuation by an operator (8) for remote control of the grinding machine (1).



## INTERNATIONAL SEARCH REPORT

International application No.  
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## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: B24B 7/18

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: A47L, B24B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6238277 B1 (C. WARREN DUNCAN ET AL), 29 May 2001 (29.05.01), column 8, line 26 - line 29, figures 1-3, abstract --	1
Y	US 3837028 A (SAMUEL DOUGLAS BRIDGE), 24 Sept 1974 (24.09.74), column 1, line 14 - line 25; column 1, line 38 - line 55; column 2, line 25 - line 32, figures 1,2 --	1
A	WO 9514140 A1 (BYGGROBOTIK I GÖTEBORG AB), 26 May 1995 (26.05.95), page 1, line 4 - line 17; page 2, line 24 - page 3, line 6; page 5, line 21 - line 25, figures 2,5,6 --	1

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

\* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

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"&amp;" document member of the same patent family

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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
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A	US 4097950 A (LARRY S. SATTERFIELD), 4 July 1978 (04.07.78), figures 1,2, abstract  --	1
A	US 5199996 A (ANDRE JONAS ET AL), 6 April 1993 (06.04.93), column 3, line 1 - line 18; column 5, line 42 - line 66, figures 1a,1b  -- -----	1



## INTERNATIONAL SEARCH REPORT

Information on patent family members

29/04/03

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